

## Claims

What is claimed is:

1. A manpower vehicle driven by weight, characterized in that, includes a drive mechanism called Cheng-Ze drive mechanism, which can transform input shaft's swing motion into output shaft's unilateral rotation, wherein the input shaft and the output shaft run parallel; and a pedal mechanism for driving(1), mounted on the input shaft (I-I) which is extended from the front of a well-airtight wheel box (2), which can be pedaled up and down alternately with the left and right foot; and a coupling (3), connected with a force-transmitting link (4) on the output shaft (II-II), which is extended from the back of the wheel box (2); and a pair of bevel gears (6) and (7), mounted on the other end of the force-transmitting link (4) and the wheel shaft (8) respectively; and pedals (1-3) or (1-6) or (1-8) of the pedal mechanism, when these are continually pedaled by the left and right foot (1) up and down, that is, under the action of weight, the input shaft (I-I) in the wheel box (2) is continually driven to swing from left to right by turns ,thus to drive the output shaft (II-II) rotate clockwise all along; and a wheel (9), driven by the drive moment which is generated from the output shaft (II-II), to pass through the universal coupling (3), the force-transmitting link (4) and the pair of bevel gears (6) and (7) to rotate anti-clockwise, that is, this manpower vehicle runs forward.

2. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein the structure in the wheel box (2) is that the input shaft (I-I) and the output shaft (II-II) run parallel; and a chain wheel (2-1) with a pallet structure (2-6) and a gear (2-3) with pallet structure(2-7), fixed on the input shaft (I-I), wherein the outer ring of the pallet (2-6) on the chain wheel (2-1) can rotate clockwise and the outer ring of pallet (2-7) on the gear(2-3) can rotate anti-clockwise; and a chain wheel (2-2) and a gear (2-4), correspondingly fixed on the output shaft (II-II); and the chain wheel (2-1) and the chain wheel (2-2), driven by chain (2-5); and the gear (2-3) and the gear (2-4), driven by meshing with each other; and the chain wheel (2-1), when the input shaft (I-I) rotates clockwise, drives chain wheel (2-2) by chain (2-5), that drives the output shaft (II-II) to rotate clockwise, here, the gear (2-3) turns idly and transfers no moment due to the action of the pallet (2-7) despite the gear (2-3) and the gear (2-4) meshed well; and the gear (2-3), when input shaft (I-I) rotates anti-clockwise, drives the gear (2-4), so that the output shaft (II-II) is driven to rotate clockwise too, here, chain wheel (2-1) turns idly and transfers no moment due to the action of the pallet (2-6), thus the input shaft (I-I) swings from left to right alternately, that

drives output shaft (II-II) to rotate clockwise and continuously.

3. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein the direction of the chain wheel (2-1) mounted on the input shaft (I-I) and the direction of two pallet on the gear (2-3) are mounted in reverse respectively, that is, the input shaft (I-I) swing from left to right alternately and the output shaft (II-II)continuously rotates clockwise all along.

4. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein the chain wheel (2-1) with the pallet structure and the gear (2-3) without the pallet structure are fixed on the input shaft (I-I), correspondingly, the chain wheel (2-2) without the pallet structure and a gear (2-4) with the pallet structure are fixed on the output shaft (II-II); and the two pallet on the chain wheel, mounted in facing or reverse direction, that is, the input shaft (I-I) swings from left to right alternately and the output shaft (II-II) continuously rotates clockwise or anti-clockwise all along.

5. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein the chain wheel (2-1) on the input shaft (I-I) and the chain wheel (2-2) on the output shaft (II-II) are strap wheels or tooth-like wheels or rope wheels; and the pallet (2-6) and the pallet (2-7), being the type of roller friction or eccentric fan-shaped friction.

6. The manpower vehicle driven by weight in claim 1 , characterized in that, said output shaft (II-II), coupling (3),force-transmitting link (4) and pair of bevel gears (6) and (7), all mounted in a close closed pipe (5); and the wheel box (2) and wheel shaft (8), connected by the closed pipe (5).

7. The manpower vehicle driven by weight in claim 1 , characterized in that, the pair of bevel gears (6) and (7), being a pair of annular gears.

8. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein a gear (2-8) with pallet and a gear (2-10) with pallet are fixed on the input shaft (I-I); and the pallet on the two gears, mounted in facing or reverse direction; and a gear (2-9) and a gear (2-11), accordingly, fixed on the output shaft (II-II); and the gear (2-8) on the input

shaft (I-I) and the gear (2-9) on the output shaft (II-II) , driven by meshing with each other; and the gear (2-10) on the input shaft (I-I) and the gear (2-11) on the output shaft (II-II) , driven by meshing with each other through a middle gear (2-12); or a gear (2-8) with pallet structure and a gear (2-10) without pallet structure, fixed on the input shaft (I-I); and a gear (2-9) without pallet structure and a gear (2-11) with the pallet structure, fixed on the output shaft (II-II); and the pallet on the two gears, mounted in facing or reverse direction, that is, the input shaft (I-I) swings from left to right alternately and the output shaft(II-II) continuously rotates clockwise or anti-clockwise all along.

9. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein different transmission ratio can be gained by selecting different fitting dimension of the chain wheel (2-1),(2-2) and the gear (2-3),(2-4).

10. The manpower vehicle driven by weight in claim 1 , characterized in that, said Cheng-Ze drive mechanism, wherein a spline coupling (14) is fitted in inner hole of the output shaft (II-II); and a thin pole, extending out from the left end of the spline coupling; and a compress spring (13) is mounted on the thin pole; and the compress spring, gored on the left end face, that is, the spline coupling (14) can move forward and backward along the axle, or fit in the spline hole on one end of a spline universal coupling (15) and transfer drive moment, or disengage from the spine hole on one end of the spline universal coupling (15),that is, a wheel (9) rotates clockwise and manpower vehicle runs back.

11. The manpower vehicle driven by weight in claim 1 , characterized in that, the structure of the pedal mechanism used to drive, being that the chain wheel (1-1) is mounted on the input shaft and the chain (1-2) is coiled around the wheel; and the pedals (1-3) are mounted respectively on two ends of chain (1-2), thus the pedals (1-3) move up and down linearly.

12. The manpower vehicle driven by weight in claim 11 , characterized in that, said chain wheel (1-1), replaced by a tooth-like wheel or a rope wheel; and said chain (1-2), replaced by a tooth-like strip or a steel rope accordingly.

13. The manpower vehicle driven by weight in claim 1 , characterized in that, the structure of the

pedal mechanism (1) used to drive ,being that a pedal pole (1-7) is mounted on the input shaft; and the pedal (1-6) is hinged with two ends of the pedal pole (1-7).

14. The manpower vehicle driven by weight in claim 1 , characterized in that, the structure of the pedal mechanism (1) used to drive, being that the pedal pole (1-9) is mounted on the input shaft; and a accessorial pedal pole (1-11), run parallel and deviated with a proper distance to the pedal pole (1-9); and the pedals (1-8), hinged with ends of the pedal pole (1-9) and the accessorial pedal pole (1-11) respectively.

15. The manpower vehicle driven by weight in claim 1 , characterized in that, further includes a handle module (11) with a folding structure, comprising: a fold seat (11-2), a shaft (11-3), a handlebar (11-6), a fixing pin (11-5), a spring (11-4) and a drawing button handle (11-1); and the shaft (11-3), mounted on the vicinity of two ends of the fold seat (11-2) respectively; and the end of the handlebar (11-6), plugged into the fold seat (11-2) and rotating around the shaft (11-3); and the end of said handlebar(11-6), having throughout holes in level and perpendicularity; and the spring (1-4), goring and pressing one end of the fixing pin (11-5) in level, that is, the other end of the fixing pin (11-5) is plugged into the level or perpendicularity throughout holes on the end of the handlebar (11-6) correspondingly; and the drawing button hand (11-1), mounted on said fixing pin (11-5) perpendicularly to the axle fast.

16. The manpower vehicle driven by weight in claim 1 , characterized in that, Cheng-Ze drive mechanism can be used in the two-wheel bicycle, three-wheel bicycle, four-wheel vehicle, water-bicycle, small boat, manpower aircraft, multiform manpower drive, manpower dynamotor, wave or tide dynamoelectric equipment and internal-combustion rotated axis.